ABSTRACT OF THE DISCLOSURE

A waveguide plate with a plate-like glass substrate (1), carrying a waveguiding layer (2), with at least one coupling grating on the surface carrying said waveguiding layer (2), which coupling grating is formed as a grating of lines with a period between 150 nm and 1000 nm, the extension of said grating being at least 5 cm with lines parallel to one another, wherein the coupling angle (Θ) varies by not more than 0.1°/cm along a line of said grating and wherein the absolute value of the deviation of the coupling angle (Θ) on said waveguide plate, from a predefined desired value, does not exceed 0.5°. The deviation from the average value of the coupling angle does not exceed 0.3°, preferably not 0.15° on the whole waveguide plate. The waveguide plate is suitable as part of a sensor platform and of an arrangement of sample compartments for chemo-and bioanalytical investigations in order to produce a coupling grating formed as a line grating with a grating period between 100 nm and 2500 nm, a substrate (1) is covered with a photoresist layer (10) and exposed for instance at the Lithrow angle (Θ_L) or at 0° to a mercury-vapour lamp (11) via a folding mirror (13, 13') through a phase mask (14) in the near field of which the photoresist layer is arranged, then structured by reactive ion etching and provided with a transparent layer by reactive DC magnetron sputtering, particularly, pulsed DC sputtering or AC-superimposed DC sputtering. The phase mask (14) is structured in advance with the laser two-beam interference method. Since highly precise gratings of large dimensions can be produced, the process is particularly suited for the production of optical elements, particularly evanescent field sensor plates and optical couplers for communications technology which can be employed in particular as filters for wavelength multiplexing in fibre-optic networks.